

LArSoft minutes, 18-May-2011. -- Eric Church

LArSoft minutes appear at <https://cdcvs.fnal.gov/redmine/projects/activity/larsoftsvn>. (The location presumably at which you found these!) For further details of matters reported here drill down into the wiki, etc, at that redmine site. Everyone is welcome to attend the bi-weekly meetings. Next meeting will be 1-June-2011. It will be in the Racetrack, 7X0.

There are pdfs on the documents link of the redmine site for today by Bill, Bruce, Eric. Click Documents, sort by Date.

System Administrivia: There has been sufficient interest expressed in a self-led set of LArSoft exercises for the newcomer that Eric has bumped that up toward the top of his list. It will be in a set of links somewhere prominent on this project's wiki. Watch this space.

Second, there is now a ubooneoffline redmine project with instructions on how to build proprietary and/or just plain specific-to-MicroBooNE analysis code. As yet, there is no nightly build, so you must check out the entire ubooneoffline repository and build it in your usual LArSoft test space with a simple gmake clean, gmake all. "Entire" means one package so far. Mitch will put ArgoNeuT specific analysis code into its separate repository soon.

Bill S gave a nice presentation on the use of Valgrind. Instructions are on the wiki. It's an enormously powerful (if slow) tool to show us what LArSoft's biggest resource (memory, cpu) hogs are. Short answer is for cpu, the biggest time-consumer is NearestChannel. We've discussed this pernicious time waster before. Bill revisited this function and gained a factor of 4 in speed-up. Yay. Also using Valgrind Bill found and pulled out an unused 2D diagnostic histogram which in uBooNE running was hogging about 1 GB of memory. The audience suggested that NearestChannel ought to be able to be done much more simply. Bruce may have a crack at it.

On the subject of code performance, Brian R and others discovered that GENIE is a huge memory hog, even with the spline fits with extraneous materials unused. The current recommendation is to run GENIE events in one fcl job, and then go and read those up and proceed with your job in a separate job.

Bruce gave a nice presentation showing that for one particular ArgoNeuT data muon and a corresponding carefully constructed MC muon the raw signals on the wires correspond beautifully for both Induction and Collection planes. One might like to see this done in bins of muon polar angle, for example. The Induction (Collection) hit resolution after deconvolution is 210 (530) micrometers. Quite impressive and a nice validation of Brian P's work.

Eric showed Geant4 StackTracking and EventScoring techniques as they apply to his LBNE Nucleon decay bgd study. See his talk for details. Eric's got to work with Adam as to why the lbne-bulky.gdml liquid Ar volume comes out to only 10ktonnes and not 20, let alone the new 34ktonne number being pushed by Bruce. The audience also suggested that not only should Eric re-toss secondaries of rare processes which he's doing now, but also to weigh the rare MuNuclear xsection itself (which is the process from which the muon spallation/photodissociation produces the K0s, neutrons, Lambdas that we worry about for nucleon decay). The statement is that the first technique is equivalent to the second. A post-meeting look by Eric suggests both can be done with a few days more work. This requires correct weighting

of tracks and keeping track of those weights. It will be a huge aid to generating necessary statistics for the nucleon decay bgd study.

See ya at the next LArSoft mtg in the Racetrack, 7th floor on 6/1, Wed, 9am CST.

Details for the next meeting:

>>> video: 85LARSW

>>> phone: 510 883 7860 (ID 85LARSW)

>>> fnal location: Racetrack, 7th floor x-over